Electronic Supplementary Information (ESI)

A novel impedance sensing approach for precise electromechanical characterization of cells

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ESI Table 1: Process parameters for microfluidic device fabrication using SU-8

Process	SU8 – 2005	SU8-2015
1) Spin-coating speed	1900 rpm, 30s	2200 rpm, 30s
2) Soft bake temperature	95 °C, 2 min	95 °C, 4 min
3) Exposure Dose	120 mJ/cm ²	140 mJ/cm ²
4) Post Exposure Bake (PEB) temperature	95 °C, 1 min	65 °C, 1 min 95 °C, 3 min
5) Development time (in SU8 Developer)	1 min	3 min
6) Hard Bake	250 °C, 10 min	250 °C, 10 min

ESI Table 2: Volunteer/patient details for lymphocyte experiments

		Number of cells analyzed	Fasting blood glucose level (mg/dL)
Normal Lymphocyte	N1	8597	86
	N2	10038	71
	N3	4370	90
Diabetic Lymphocyte	D1	4720	151
	D2	2544	204
	D3	2581	160

ESI Figure 1: A) Process flow for fabrication of the microelectrodes; B) Schematic of the coplanar microelectrodes used for lymphocyte experiments. The constricted section of the microchannel was positioned in between the CH2 electrodes; C) Schematic of the microelectrodes used for erythrocyte experiments.

ESI Figure 2: The low-noise, custom-built instrumentation amplifier that was used for our measurements

ESI Figure 3: It takes approximately 40 minutes for the system to reach a steady state during syringe pump driven flow.

ESI Figure 4: Individual population distributions of normalized transit times for normal and diabetic lymphocytes followed by curve fitting and outlier removal. The final transit time values are reported in the table.

ESI Figure 5: Statistical significance using the K-S test for normalized transit times of normal and diabetic lymphocytes. The D-value was calculated using the cumulative distributions.

ESI Figure 6: Individual population distributions of amplitudes for normal and diabetic lymphocytes followed by curve fitting and outlier removal.

ESI Figure 7: Statistical significance using the K-S test for amplitudes of normal and diabetic lymphocytes. The D-value was calculated using the cumulative distributions.